

Method and System for Indicating that Durations Are Estimated

Technical Field

The present invention relates to the display of information in a project status report. More specifically, the invention relates to designating that durations of specific tasks are estimated or tentative.

Background of the Invention

As computer programs have advanced in the project management field, duration planning capabilities have been included. In the past, duration planning capabilities have only allowed a user to display and track definite durations. Conventional systems do not allow the user to indicate that durations are tentative or estimated. Users are thus hesitant to use these duration planning capabilities because they make durations seem to be set in stone, and raise false expectations about when projects and tasks will be finished.

In past products, advanced project management users could enter multiple durations for a project or task. These products allowed advanced users to enter best case, worst case, and expected durations. However, these products were complicated and were not user-driven in terms of letting the user express uncertainty about a duration. Instead, these products only allowed the user to input multiple guesses and then the program would combine the multiple guesses. Not only are estimated durations useful in indicating that projects or tasks are estimated, they are easy for novice users to access.

In view of the foregoing, there is a current need in the art to replace a presentation of product or task duration data with quickly recognizable text for identifying that a duration is estimated or tentative. In particular, novice users without extensive project management training need a simple system to indicate that durations for projects and tasks are estimated. There is also a current need for a user to be able to select an option to have new tasks that are created have estimated duration characters until the user chooses to enter a duration value. There is a further need in the art for a user to be able to filter the task list to display only tasks that have estimated durations.

Summary of the Invention

The present invention solves the above problems by allowing the user to indicate that durations of specific tasks are estimated or tentative. A field can be a location that contains specific information about a task. A duration field can be a location that contains information about a task duration. An estimated duration field can be a location that contains information about whether or not a task duration is estimated.

The user can indicate estimated durations by sheet mode or dialog mode. Estimated duration characters can be symbols of uncertainty, such as "?", that indicate that the duration entries are not fixed and final, but may need to be adjusted in the future. In the sheet mode, the user can enter a duration value (i.e. "2wks") with an estimated character (i.e., "?") in the entry field. This entry field data (i.e. "2wks?") can be parsed or cut off and the parser can then set the estimated field to "yes". In the dialog mode, the user can set the estimated field to "yes" or "no" by marking the duration field as estimated with an estimated duration character (i.e. "3 days?") or by marking a checkmark in the estimated field. In the dialog mode, the dialog's estimated field and the duration field can be constantly kept in sync. The program can process and display estimated durations with a default estimated duration character (i.e. "?") or an alternate estimated duration character (i.e. "*" or "~").

A hierarchical arrangement of tasks is often used in the project management field. The lowest level in the task hierarchy is nonsummary tasks or subtasks. The intermediate levels in the task hierarchy are summary tasks. The top level in the task hierarchy is a project summary task. If a summary task has at least one nonsummary (or child) task which is estimated, then the summary task will be estimated.

The user can select an option to not display the estimated duration character even though the estimated field for the task is set. The user can also select an option to have new tasks that are created have estimated duration characters until the user chooses to enter a duration value. The program can also filter the task list to display only tasks that have estimated duration characters.

The present invention can include a user interface (UI), a parser, three types of storage (duration value, duration display type, estimated field), and a display. The UI can interact with the user and the rest of the system. The parser can be a text converter. The parser can break the input data into small chunks of data that can be interpreted. The storage can consist of a duration

1 value memory, a duration display type memory, and an estimated flag memory. The duration
2 value memory can store the duration value, which is the value that is internally used. The
3 duration display type memory can store the duration display type, which indicates the way the
4 duration should be displayed (i.e., days, weeks, months). The estimated flag memory can store
5 the estimated flag, which indicates whether or not an estimated duration character should be
6 displayed. The display can be a component that keeps information about what will be shown on
7 the system's visual output devices (i.e., a computer screen). The display can pull information
8 from the duration value memory, the duration display type memory, and the estimated flag
9 memory, and then can combine this information and output human readable text.

10 The aforementioned advantages of the invention, as well as additional advantages
11 thereof, are more fully described by the detailed description of exemplary embodiments and the
12 accompanying drawings.

13 14 **Brief Description of the Drawings**

15 FIG. 1 is a block diagram of a personal computer that provides an operating environment
16 for an exemplary embodiment of the present invention.

17 FIG. 2 is a functional block diagram illustrating an exemplary embodiment which can
18 report actions between a UI, a parser, a duration value memory, a duration display type memory,
19 an estimated flag memory, and a display.

20 FIG. 3 is a flow diagram illustrating an exemplary method for entering and displaying
21 estimated duration characters using the sheet mode.

22 FIG. 4 is a flow diagram illustrating an exemplary method for entering and displaying
23 estimated duration characters using the dialog mode.

24 FIG. 5 is a flow diagram illustrating an exemplary method for how the parser breaks
25 down the duration value string.

26 FIG. 6 is a flow diagram illustrating an exemplary method for displaying estimated
27 duration characters.

28 FIG. 7 is a screen display illustrating an exemplary embodiment of the sheet mode, using
29 project management data present in a grid format.

30 FIG. 8 is a screen displays illustrating an exemplary embodiment of the dialog mode.

1 FIG. 9 is a screen display illustrating some estimated durations options available in an
2 exemplary embodiment of the present invention.

3 4 **Detailed Description of Exemplary Embodiments**

5 The present invention provides a method and system for displaying estimated duration
6 characters that indicate that durations of specific tasks are estimated or tentative. By using
7 estimated duration characters, the user can get a quick and easy visualization of estimated tasks.

8 FIG. 1 is a block diagram of a personal computer that provides an exemplary operating
9 environment. FIG. 2 is a block diagram illustrating internal objects. FIGs. 3 - 6 are flow
10 diagrams illustrating exemplary methods for entering and displaying estimated duration
11 characters. FIGs. 7 - 9 are screen displays illustrating an exemplary embodiment of the current
12 invention.

13 Although an exemplary embodiment will be generally described in the context of a client
14 program module and an operating system running on a personal computer, those skilled in the art
15 will recognize that the present invention also can be implemented in conjunction with other
16 program modules for other types of computers. Furthermore, those skilled in the art will
17 recognize that the present invention may be implemented in a stand-alone or in a distributed
18 computing environment. In a distributed computing environment, program modules may be
19 physically located in different local and remote memory storage devices. Execution of the
20 program modules may occur locally in a stand-alone manner or remotely in a client/server
21 manner. Examples of such distributed computing environments include local area networks of
22 an office, enterprise-wide computer networks, and the global Internet.

23 Referring now to the drawings, in which like numerals represent like elements throughout
24 the several figures, aspects of the present invention and an exemplary operating environment will
25 be described.

26 FIG. 1 illustrates various aspects of an exemplary computing environment in which the
27 present invention is designed to operate. Those skilled in the art will immediately appreciate that
28 FIG. 1 and the associated discussion are intended to provide a brief, general description of an
29 exemplary computer hardware and program modules, and that additional information is readily
30 available in the appropriate programming manuals, user's guides, and similar publications.

FIG. 1 illustrates a conventional personal computer 10 suitable for supporting the operation of an exemplary embodiment of the present invention. As shown in FIG. 1, the personal computer 10 operates in a networked environment with logical connections to a remote computer 11. The logical connections between the personal computer 10 and the remote computer 11 are represented by a local area network 12 and a wide area network 13. Those of ordinary skill in the art will recognize that in this client/server configuration, the remote computer 11 may function as a file server or computer server.

The personal computer 10 includes a central processing unit (CPU) 14. The personal computer also includes system memory 15, including read only memory (ROM) 16 and random access memory (RAM) 17, which is connected to the CPU 14 by a system bus 18. An exemplary computer 10 utilizes a BIOS 19, which is stored in ROM 16. Those skilled in the art will recognize that the BIOS 19 is a set of basic routines that helps to transfer information between elements within the personal computer 10. Those skilled in the art will also appreciate that the present invention may be implemented on computers having other architectures, such as computers that do not use a BIOS, and those that utilize other microprocessors.

Within the personal computer 10, a local hard disk drive 20 is connected to the system bus 18 via a hard disk drive interface 21. A floppy disk drive 22, which is used to read or write a floppy disk 23, is connected to the system bus 18 via a floppy disk drive interface 24. A CD-ROM or DVD drive 25, which is used to read a CD-ROM or DVD disk 26, is connected to the system bus 18 via a CD-ROM or DVD interface 27. A user enters commands and information into the personal computer 10 by using input devices, such as a keyboard 28 and/or pointing device, such as a mouse 29, which are connected to the system bus 18 via a serial port interface 30. Other types of pointing devices (not shown in FIG. 1) include track pads, track balls, pens, head trackers, data gloves and other devices suitable for positioning a cursor on a computer monitor 31. The monitor 31 or other kind of display device is connected to the system bus 18 via a video adapter 32.

The remote computer 11 in this networked environment is connected to a remote memory storage device 33. This remote memory storage device 33 is typically a large capacity device such as a hard disk drive, CD-ROM or DVD drive, magneto-optical drive or the like. The personal computer 10 is connected to the remote computer 11 by a network interface 34, which is used to communicate over the local area network 12.

As shown in FIG. 1, the personal computer 10 is also connected to the remote computer 11 by a modem 35, which is used to communicate over the wide area network 13, such as the Internet. The modem 35 is connected to the system bus 18 via the serial port interface 30. The modem 35 also can be connected to the public switched telephone network (PSTN) or community antenna television (CATV) network. Although illustrated in FIG. 1 as external to the personal computer 10, those of ordinary skill in the art will quickly recognize that the modem 35 may also be internal to the personal computer 11, thus communicating directly via the system bus 18. It is important to note that connection to the remote computer 11 via both the local area network 12 and the wide area network 13 is not required, but merely illustrates alternative methods of providing a communication path between the personal computer 10 and the remote computer 11.

Although other internal components of the personal computer 10 are not shown, those of ordinary skill in the art will appreciate that such components and the interconnection between them are well known. Accordingly, additional details concerning the internal construction of the personal computer 10 need not be disclosed in connection with the present invention.

Those skilled in the art will understand that an operating system 36 and one or more program modules, such as a estimated durations program 37, are provided to the personal computer 10 via computer-readable media. In an exemplary computer, the computer-readable media include the local or remote memory storage devices, which may include the local hard disk drive 20, floppy disk 23, CD-ROM or DVD 26, RAM 17, ROM 16, and the remote memory storage device 33. In an exemplary personal computer 10, the local hard disk drive 20 is used to store data and program modules, including the operating system 36 and a estimated durations program 37.

The focus of the estimated durations program 37 is described below in connection with FIGs. 2-9. In an exemplary embodiment, the estimated duration characters are used for project management in planning, monitoring, and controlling the development of a particular undertaking. The product management information is usually listed in a grid or spreadsheet comprising rows and columns to display project items and status. The project management information is entered in fields.

A field is a location (such as the intersection of a column and a row in a grid) that contains a specific kind of information. A field can be a location that contains specific

1 information about a task. A duration field can be a location that contains information about a
2 task duration. An estimated duration field can be a location that contains information about
3 whether or not a task duration is estimated.

4 The user can indicate estimated durations by the sheet mode or the dialog mode.
5 Estimated duration characters are symbols of uncertainty, such as "?", that indicate that the
6 duration entries are not fixed and final, but may need to be adjusted in the future. A user can
7 specify that an estimated duration character be displayed in a field of the grid. In the sheet mode,
8 the user enters a duration value (i.e. "2wks") with an estimated duration character (i.e., "?") in
9 the entry field. This entry field data (i.e. "2wks?") is parsed or cut off and the parser can then set
10 the estimated field to "yes". In the dialog mode, the user sets the estimated field to "yes" or "no"
11 by marking the duration field as estimated with an estimated duration character (i.e. "2wks?") or
12 by marking a checkmark in the estimated field. In the dialog mode, the dialog's estimated field
13 and the duration field are constantly kept in sync. The program can process and display
14 estimated durations with a default estimated duration character (i.e. "?") or an alternate estimated
15 duration character (i.e. "*" or "~").

16 A hierarchical arrangement of tasks is often used in the project management field. The
17 lowest level in the task hierarchy is nonsummary tasks or subtasks. The intermediate levels in
18 the task hierarchy are summary tasks. The top level in the task hierarchy is a project summary
19 task. If a summary task has at least one nonsummary (or child) task which is estimated, then the
20 summary task will be estimated.

21 The user can select an option to not display the durations with the default estimated
22 duration character even though the estimated field for the task is set. The user can also select an
23 option to have new tasks that are created have estimated duration characters until the user
24 chooses to enter a duration value. The program can also filter the task list to display only tasks
25 that have estimated duration characters.

27 *The Internal Objects*

28 Turning now to FIG. 2, exemplary embodiments of the present invention are described.
29 FIG. 2 is a functional block diagram illustrating an exemplary system 200 comprising a user
30 interface (UI) 205, a parser 210, three types of storage (duration value memory 215, duration
31 display type memory 220, estimated flag memory 225), and a display 230. The UI 205 interacts

with the user and the rest of the system. The parser 210 is a text converter. The parser 210 breaks the input data into small chunks of data that can be interpreted. The storage consists of a duration value memory 215, a duration display type memory 220, and an estimated flag memory 225. The duration value memory 215 stores the duration value, which is the value that is internally used. For example, when the user enters "3 days", this is internally stored as a duration value of "1440 minutes". The duration display type memory 220 stores the duration display type, which is the way the duration should be displayed. Durations can be displayed as minutes, hours, days, weeks, or months. When the user enters "2wks?", the duration display type memory 220 stores information that indicates that durations should be displayed as weeks. The display also understands abbreviations of alterations of the works minutes, hours, days, weeks, or months. Thus entries such as "3dys", "3yrs", or "3wks" are understood. The estimated flag memory 225 stores the estimated flag, which indicates whether or not an estimated duration should be shown. The display indicates what will be shown on the system's visual output device (such as a computer screen). The display pulls information from the duration value memory 215, the duration display type memory 220, and the estimated flag memory 225, combines this information and outputs human readable text.

The Flow Diagrams

The present invention solves the above problems by allowing the user to indicate that durations of specific tasks are estimated or tentative. The user can do this by the sheet mode or by the dialog mode.

FIG. 3 is a flow diagram illustrating the overview of an exemplary method for entering and displaying estimated duration characters using the sheet mode. In step 305, the user chooses to use the sheet mode through the UI 205. In step 310, the user uses the UI 205 to input a duration value string in the entry field. In step 315, the parser 210 breaks down the estimated duration string into the estimated duration character, duration display type, and duration value. In step 320, the duration value memory 215 stores the duration value. In step 325, the duration display type memory 220 stores the duration display type. In step 330, the display asks if the estimated flag is set to "yes". If the answer to step 330 is "yes", an estimated flag is stored in the estimated flag memory 225 in step 340. Then the display shows the estimated duration character in step 350.

1 If the answer to step 330 is "no", then the display shows the duration value string that the
2 user entered, and no estimated duration character is shown, as set forth in step 345.

3 FIG. 4 is a flow diagram illustrating the overview of an exemplary method for entering
4 and displaying estimated duration characters using the dialog mode. In step 305, the user
5 chooses to use the dialog mode through the UI 205. In step 410, the UI 205 creates copies of the
6 duration field and the estimated field. In step 415, the user access the UI 205 to input the
7 duration value string into the entry field. In step 420, the parser 210 breaks down the duration
8 value string into estimated duration character, duration display type, and duration value. In step
9 425, the duration value memory 215 stores a copy of the duration value. In step 430, the
10 duration display type memory 220 stores a copy of the duration display type. In step 435, the
11 display determines if the estimated flag is set to "yes". If the answer is "yes", the estimated flag
12 memory stores the estimated flag in step 450. Then the display shows the estimated duration
13 character in step 455.

14 If the answer to step 435 is "no", then the display shows the actual duration (the duration
15 value string that the user entered), and no estimated duration character is shown, as set forth in
16 step 445.

17 In step 460, the user chooses whether or not to close the dialog box. If the answer to 460
18 is "no", and the user does not want to close the dialog box, the process skips back up to step 415.
19 If the answer to step 460 is "yes", and the user does want to close the dialog box, the user can do
20 this by choosing "OK" or "Cancel" in step 465. If "OK" is chosen, then the three storage
21 memories (the duration value memory 215, the duration display type memory 220, and the
22 estimated flag memory 225) copy the duration value, the duration display type, and the estimated
23 flag, as set forth in step 470. If the "Cancel" option is chosen in step 465, the process ends
24 without copying this information.

25 FIG. 5 is a flow diagram illustrating how the parser 210 breaks down the duration value
26 string, as set forth in step 315 of FIG. 3 and 420 of FIG 4. In step 505, the parser 210 identifies
27 the duration value and the duration display type from the duration value string. For example,
28 "2wks?" could be entered, and the parser 210 would identify "2" as the duration value and "wks"
29 as the duration display type. In step 510, the parser 210 checks the remaining characters in the
30 duration value string to see if it is the default estimated duration character in the estimated flag
31 memory 225. In the example of "2wks?", the parser 210 will check to see if "?" is in the

1 estimated flag memory 225. The parser 210 then checks any remaining characters in the
2 duration value string to see if it is an alternate estimated duration character stored in the
3 estimated flag memory 225, as set forth in step 515. An example of an alternate estimated
4 duration character is "*" or "~". In step 518 the parser asks if an estimated duration character
5 was found in steps 510 or 515. If the answer to step 518 is "yes", the process steps to skip 520,
6 where the estimated flag is set to "yes". Then the parser 210 removes the default estimated
7 characters and alternate estimated characters from the duration value string, and completes the
8 normal parsing process, as set forth in step 521. If the answer to step 518 is "no", the estimated
9 flag is set to "no", as set forth in step 525. After setting the estimated flag to "yes" or "no" as set
10 forth in steps 520-521 and 525, the process skips to step 320 of FIG. 3 and step 425 of FIG. 4.

11 FIG. 6 is a flow diagram illustrating an exemplary method for displaying estimated
12 duration characters, as set forth in step 350 of FIG. 3 and steps 455 of FIG. 4. In step 605, the
13 display obtains the duration value from the duration value memory 215. In step 610, the display
14 obtains the duration display type from the duration display type memory 220. In step 615, the
15 display combines the duration value and duration display type into a duration value string that is
16 a human readable string. In step 620, the display asks the estimated flag memory 225 if the
17 estimated flag is set to "yes". If the answer to step 620 is "no", the process skips to 630, where
18 the display shows the duration value string with no estimated duration on the end. If the answer
19 to step 620 is "yes", the display asks if the user option to display estimated duration is set. If the
20 answer to 625 is "no", the process skips to step 630. If the answer to step 625 is "yes", the
21 display looks up the estimated duration position in step 635. In step 640, the display looks up
22 the default estimated duration (i.e. "?"). In step 645, the display shows the data with the
23 estimated duration in the correct position.

24 25 The Screen Displays

26 In an exemplary embodiment of the present invention, the user can input estimated
27 duration characters for project management tasks. For a representative project management
28 example, the estimated duration characters will illustrate if project tasks are strict or estimated or
29 tentative. The estimated duration characters will indicate the task status. For example, a user
30 could use the exemplary embodiment to track the remodeling of his kitchen and to indicate that
31 certain tasks in the project of remodeling his kitchen are estimated.

1 To illustrate the operation of this exemplary embodiment, we will assume that the user
2 has a project management file that contains a list of tasks with data entered into various fields.
3 This information will be in a grid format where each field represents one column of one row.
4 We also assume that the project is underway and various tasks have been scheduled.

5 The estimated duration choice allow the user to enter the conditions for displaying the
6 estimated durations in different levels. In an exemplary embodiment, there are three levels for
7 project management information: nonsummary, summary, and project summary. If a summary
8 task has at least one nonsummary (or child) task which is estimated, then the summary task will
9 be estimated.

10 FIG. 7 is a screen display illustrating an exemplary embodiment using the sheet mode,
11 using project management data present in a grid format. Field 705 is a name field, where the
12 task name "Remodel Kitchen" has been entered. Field 706 is an estimated field. Field 710 is a
13 duration field, and is where the estimated duration characters are indicated. Because the duration
14 of field 710 is a summary type, field 710 will automatically indicate that it is an estimated
15 duration if any of its subtasks 720, 725, or 730 are estimated durations. Field 715 is an entry
16 field, and is sometimes refereed to as an entry bar.

17 As set forth in step 310 of FIG. 3, the user can use the entry field 715 to type in the
18 estimated duration characters. For example, the user can enter "2weeks?". The user does this by
19 highlighting the field 720 and entering "2wks?" in the entry field 715. When the user presses the
20 enter key, this information will be displayed in the field 720. Following step 315, the parser 210
21 breaks down "2wks?" into "?" "wks" and "2wks" As set forth in steps 320-325, the information
22 "weeks" is stored in the duration display type memory 220 and "2wks" is stored in the duration
23 value memory 215 as the number of minutes ("4800 minutes") in "2wks". Following step 330,
24 the display takes "?" and asks if it is an estimated duration character. Because "?" matches the
25 character stored as the default character in the estimated flag memory 225, an estimated flag is
26 set to "yes" in the estimated flag memory 225 as set forth in step 340. The display then shows
27 the estimated duration character "?" in field 720 as set forth in step 350.

28 FIG. 8 is a screen display illustrating an exemplary embodiment using the dialog mode
29 for the above project management example. The user can access the Task Information dialog
30 box by double-clicking on field 720 of FIG. 7, or using the tool bar command to display the Task
31 Information dialog box. This Task Information dialog box 800 can be used to specify whether or

not durations are estimated. In the representative example, the user can choose to enter "?" in the duration field 810 or the user can choose to check the estimated field 815 for the field named Remodel Kitchen 805. With dialog mode, the duration field 810 and estimated field 815 are inputted and stored dynamically. For example, when the user enters "2wks?" in the duration field 810, as soon as the user types in "?", the estimated field 815 is checked. The user can only use these options if the task is a nonsummary task. If the task is a summary task, then these options are grayed out and are not available to the user. Once the user enters the estimated duration information in box 810 or 815, he can choose the "OK" 820 to enter the information and return to the project screen 700, or he can enter the "Cancel" 825 and return to the project screen 700 without entering the estimated durations information. The user can access the "Help" 830 button if the user needs help understanding the estimated durations function or other functions of the dialog box.

FIG. 9 is a representative screen display illustrating the estimated durations options available in the project management example. The checkbox for "Show that tasks have estimated durations" 905 determines whether the estimated duration characters will be shown on the project screen 700. By not checking this box, the user can choose to not display the estimated duration characters with the default estimated duration character, even though the estimated field is checked. Thus, if the checkbox 905 is not checked, the user will be able to enter "?" or other estimated duration characters in the project screen 700, but the estimated duration characters won't be displayed.

The checkbox for "New tasks have estimated durations" 910 allows the user to select the option to have new tasks that are created have the estimated flag set until the user chooses to enter a duration value. Checkbox 905 or 910 can be "Set as Default" 915 so that all new projects created have these settings. Once the user checks or does not check box 905 or 910, he can choose the "OK" 920 to enter the information and return to the project screen 700, or he can enter the "Cancel" 925 and return to the project screen 700 without entering the estimated durations options information. The user can access the "Help" 930 button if the user needs help understanding the estimated durations function or other functions of the dialog box.

The user also has the option to filter the task list to display only tasks that have estimated duration characters. The user can filter in two ways. First, the user can access an "Auto filters"

1 option and select an "estimated durations" item. Second, the user can create a filter that
2 references the estimated field.

3 The present invention has been described in relation to particular embodiments which are
4 intended in all respects to be illustrative rather than restrictive. Alternative embodiments will
5 become apparent to those skilled in the art to which the present invention pertains without
6 departing from its spirit and scope. Accordingly, the scope of the present invention is defined by
7 the appended claims rather than the foregoing description.

8